



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/828,267	04/21/2004	Yasuhiro Kunitsugu	403047	4841
23548	7590	09/01/2005	EXAMINER	
LEYDIG VOIT & MAYER, LTD 700 THIRTEENTH ST. NW SUITE 300 WASHINGTON, DC 20005-3960			AL NAZER, LEITH A	
			ART UNIT	PAPER NUMBER
			2821	

DATE MAILED: 09/01/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/828,267

Applicant(s)

KUNITSUGU ET AL.

Examiner

Leith A. Al-Nazer

Art Unit

2821

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 21 April 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-7 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-4 and 6 is/are rejected.
- 7) ☒ Claim(s) 5 and 7 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 21 April 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
- 1) ☒ Certified copies of the priority documents have been received.
 - 2) ☐ Certified copies of the priority documents have been received in Application No. _____.
 - 3) ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 21 April 2004.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this

Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 1-4 and 6 are rejected under 35 U.S.C. 102(b) as being anticipated by U.S. Patent No. 5,363,397 to Collins et al.

With respect to claim 1, Collins teaches a semiconductor laser device comprising a dielectric multilayer film on at least one of optical exit faces of a laser chip wherein the dielectric multilayer film includes a film of tantalum oxide (column 5, line 45 – column 6, line 2). Collins does not explicitly state that the multilayer film has a reflectance of at least 40%. However, Collins teaches all of the structural limitations recited in claim 1, and therefore, the multilayer film structure of Collins would inherently have a reflectance of at least 40%.

With respect to claim 2, Collins teaches the dielectric multilayer film including a film of aluminum oxide and the film of tantalum oxide (column 5, line 45 – column 6, line 2).

Art Unit: 2821

With respect to claim 3, Collins teaches the dielectric multilayer film including a film of aluminum oxide in contact with the laser chip, and a film of silicon oxide and the film of tantalum oxide (column 5, line 45 – column 6, line 2).

With respect to claim 4, Collins teaches the dielectric multilayer film being configured of a total of nine layers of, in sequence from the side in contact with the laser chip, an aluminum oxide film, a tantalum oxide film, an aluminum oxide film, a tantalum oxide film, an aluminum oxide film, a tantalum oxide film, an aluminum oxide film, a tantalum oxide film, and an aluminum oxide film (column 5, line 45 – column 6, line 2).

With respect to claim 6, Collins teaches the dielectric multilayer film being configured of a total of eight layers of, in sequence from the side in contact with the laser chip, an aluminum oxide film, a silicon film, a tantalum oxide film, a silicon film, a tantalum oxide film, a silicon film, a tantalum oxide film, and a silicon film (column 5, line 45 – column 6, line 2).

3. The following is a quotation of the appropriate paragraphs of 35

U.S.C. 102 that form the basis for the rejections under this section made in this

Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Art Unit: 2821

4. Claims 1, 2, and 4 are rejected under 35 U.S.C. 102(e) as being anticipated by U.S. Patent No. 6,721,348 to Moser et al.

With respect to claim 1, Moser teaches a semiconductor laser device comprising a dielectric multilayer film on at least one of optical exit faces of a laser chip wherein the dielectric multilayer film includes a film of tantalum oxide (table 2; column 12, line 60 – column 13, line 38). Moser does not explicitly state that the multilayer film has a reflectance of at least 40%. However, Moser teaches all of the structural limitations recited in claim 1, and therefore, the multilayer film structure of Moser would inherently have a reflectance of at least 40%.

With respect to claim 2, Moser teaches the dielectric multilayer film including a film of aluminum oxide and the film of tantalum oxide (table 2).

With respect to claim 4, Moser teaches the dielectric multilayer film being configured of a total of nine layers of, in sequence from the side in contact with the laser chip, an aluminum oxide film, a tantalum oxide film, an aluminum oxide film, a tantalum oxide film, an aluminum oxide film, a tantalum oxide film, an aluminum oxide film, a tantalum oxide film, and an aluminum oxide film (table 2; column 12, line 60 – column 13, line 38).

5. Claims 1, 2, and 4 are rejected under 35 U.S.C. 102(e) as being anticipated by U.S. Patent Application Publication No. 2004/0042520 to Shigihara et al.

Art Unit: 2821

With respect to claim 1, Shigihara teaches a semiconductor laser device comprising a dielectric multilayer film on at least one of optical exit faces of a laser chip wherein the dielectric multilayer film includes a film of tantalum oxide (paragraphs 0066-0079). Shigihara does not explicitly state that the multilayer film has a reflectance of at least 40%. However, Shigihara teaches all of the structural limitations recited in claim 1, and therefore, the multilayer film structure of Shigihara would inherently have a reflectance of at least 40%.

With respect to claim 2, Shigihara teaches the dielectric multilayer film including a film of aluminum oxide and the film of tantalum oxide (paragraphs 0066-0079).

With respect to claim 4, Shigihara teaches the dielectric multilayer film being configured of a total of nine layers of, in sequence from the side in contact with the laser chip, an aluminum oxide film, a tantalum oxide film, an aluminum oxide film, a tantalum oxide film, an aluminum oxide film, a tantalum oxide film, an aluminum oxide film, a tantalum oxide film, and an aluminum oxide film (paragraphs 0066-0079).

6. Claims 1-3 are rejected under 35 U.S.C. 102(e) as being anticipated by U.S. Patent Application Publication No. 2004/0190576 to Matsuoka et al.

With respect to claim 1, Matsuoka teaches a semiconductor laser device comprising a dielectric multilayer film on at least one of optical exit faces of a laser chip wherein the dielectric multilayer film includes a film of tantalum oxide (paragraphs 0046-0051). Matsuoka does not explicitly state that the multilayer

Art Unit: 2821

film has a reflectance of at least 40%. However, Matsuoka teaches all of the structural limitations recited in claim 1, and therefore, the multilayer film structure of Matsuoka would inherently have a reflectance of at least 40%.

With respect to claim 2, Matsuoka teaches the dielectric multilayer film including a film of aluminum oxide and the film of tantalum oxide (paragraphs 0046-0051).

With respect to claim 3, Matsuoka teaches the dielectric multilayer film including a film of aluminum oxide in contact with the laser chip, and a film of silicon oxide and the film of tantalum oxide (paragraphs 0046-0051).

Allowable Subject Matter

7. Claims 5 and 7 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

8. The following is a statement of reasons for the indication of allowable subject matter:

The prior art of record fails to teach or suggest one or more of the limitations found in dependent claims 5 and 7. With respect to claim 5, the prior art of record fails to teach or suggest the first to eighth layers, from the side in contact with the laser chip, having a thickness equivalent to $\lambda/4$ in terms of optical length, at an oscillation wavelength λ of the laser chip, and the ninth layer having a thickness equivalent to $\lambda/2$ in terms of optical length. With respect to claim 7,

Art Unit: 2821

the prior art of record fails to teach or suggest the first layer, from the side in contact with the laser chip, having a thickness equivalent to $\lambda/2$ in terms of optical length at an oscillation wavelength λ of the laser chip, and each of the second to seventh layers having a thickness equivalent to $\lambda/4$ in terms of optical length, and the eighth layer having a thickness equivalent to $\lambda/2$ in terms of optical length.

Citation of Pertinent References

9. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. The following patents further show the state of the art with respect to multilayer dielectric films containing tantalum oxide:

- a. U.S. Patent No. 6,320,206 to Coman et al.
- b. U.S. Patent No. 6,434,180 to Cunningham

Communication Information

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Leith A. Al-Nazer whose telephone number is 571-272-1938. The examiner can normally be reached on Monday-Friday, 7:30-4:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Don Wong can be reached on 571-272-1834. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Art Unit: 2821

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

LA



THUY V. TRAN
PRIMARY EXAMINER